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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/870,530	05/31/2001	Chia-Hsing Chen	148693.00367	1349

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EXAMINER

ROCCHEGIANI, RENZO

ART UNIT	PAPER NUMBER
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2825

DATE MAILED: 04/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/870,530

Applicant(s)

CHEN, CHIA-HSING

Examiner

Renzo N. Rocchegiani

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6,8-10 and 16-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6,8-10 and 16-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 6, 8-10, and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,538,270 B1 (Randolph et al.) in view of U.S. Patent No. 5,976,937 (Rodder et al.).

Randolph et al. disclose a process to form a nitride ROM (col. 1, lines 10-15) comprising the steps of depositing an ONO stack structure (item 202) over a p-type substrate (item 200 and col. 8, lines 12-13), forming a plurality of photoresist layers (item 212) over the ONO stack, using the photoresist layers to form pocket implant region (items 218 and 220) using a p-type dopant species (col. 3, lines 30-33) and using the same photoresist layers as an etch mask for the ONO stacks (Fig. 4 and col. 3, lines 36-40). Further, the process comprises implanting N-type regions to serve as source and drain regions (item 224), wherein the p-type pocket regions are adjacent to the n-type regions (Fig. 4). The photoresist layers are removed after the process is completed.(Fig. 5).

Randolph et al. do not specify that the p-type dopant used to form the pocket region may include indium. Instead Randolph et al. disclose the use of boron as the p-type dopant. (col. 3, lines 30-33).

Rodder et al. teach the manufacturing of a semiconductor device wherein doping steps to form p-type regions are performed and wherein it is taught that boron and indium are interchangeable in the formation of p-type doped regions. (col. 5, lines 56-60).

It would have been obvious to one with ordinary skill in the specific art to combine the teachings of Rodder et al. with the invention disclosed by Randolph et al. since Rodder et al. teach that indium is a known substitute for boron in the formation of p-type doped regions and since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Response to Arguments

3. Applicant's arguments filed on January 22, 2003 have been fully considered but they are not persuasive. Applicant makes two main argument as to why the prior art does not render the present invention obvious: 1) that the art may not be structurally combined and 2) that the prior art is not concerned with the diffusion problems of the present invention. These arguments are not found to be persuasive. The applicant argues that the prior art does not render the present invention obvious because it may not be structurally combined. Applicant alleges that the Randolph et al. reference teaches away from the Rodder et al. reference because of the different dept of the implantation regions and the location of the implantation regions. While the applicant is correct in stating that the two references form differently shaped implant regions, the examiner points out that the secondary reference, i.e. the Rodder et al. reference, is

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only used to indicate that indium is a p-type dopant that is interchangeable with boron. This teaching is expressed in the language of the Rodder et al. reference. In light of the Rodder et al. teachings, one with ordinary skill in the art would understand that indium and boron may be both used to form a p-type doped region and thus would necessarily have an expectation of success in substituting one for the other when forming a p-typed doped region. Thus, there exists motivation to combine the references and arrive at the claimed subject matter. As to the second argument applicant makes, the examiner points out that the Rodder et al. reference does use boron and/or indium to form diffusion regions thus whether or not it explicitly states that the species are difficult to diffuse is not the issue. Because Rodder et al. teaches the diffusion of indium and because it provides for a motivation to one with ordinary skill in the art to use indium in place of boron by stating that they are interchangeable in forming a p-type region the limitation is met and thus rendered obvious.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Renzo N. Rocchegiani whose telephone number is (571) 272-1904. The examiner can normally be reached on Mon.-Fri. 8:00 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Renzo N. Rocchegiani
Examiner
Art Unit 2825



MATTHEW SMITH
SUPERVISORY PATENT EXAMINER
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